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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,994	03/05/2002	Josephus C. Ebergen	SUN-P7023-RSH	6385

22835 7590 04/07/2004

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EXAMINER	
INOA, MIDYS	

ART UNIT	PAPER NUMBER
2188	4

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/091,994	Applicant(s) EBERGEN, JOSEPHUS C.
	Examiner Midys Inoa	Art Unit 2188

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-14 and 16-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-14 and 16-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 3-14, and 16-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima (5,269,012) in view of Chen et al. (US 2003/0120879 A1).

Regarding Claims 1 and 14, Nakajima discloses a stack memory whose push and pop operations allow it to serve as a LIFO memory. In this stack memory, when a write operation is to occur, the data item to be written is presented to the stack. Once this data item is presented to the stack, this particular item is "Pushed" in to the stack by allowing the last empty cell of the stack ("given cell contains no data items") to get the data item from its previous cells, thus allowing the data item to propagate down the stack. This is clearly demonstrated in Figure 2 where write operations occurs by pushing data item "a" down the stack to cell 4. In this demonstration, empty cells are allowed to get the data item until the data item sits in the last empty cell. Therefore, the data item would first sit in cell 0, then empty cell 1 would request or get the data item, then empty cell 2 would request the data item, empty cell 3 would request the data item, empty cell 4 would request the data item, and since cell 5 is full, no further requests would be made, thus leaving the data item in cell 4. This concludes the "push" operation of the LIFO stack memory (Figure 2 and Column 2, lines 25-50). This memory also performs a "pop" operation when a read operation is to occur. In a read operation, a data item is requested and the

request is presented to the top of the stack. At this point, being that a data item is being requested and this particular stack provides the "last in" data item first, the last full cell ("the given cell contains no space for additional data items") would "put" or transfer its data item to the previous empty cell until such data item has been provided to satisfy the data request. This is clearly demonstrated in Figure 3, where a read operation occurs when given cell 4 "puts" data item "a" in previous empty cell 3. Once this occurs, cell 3 (now full), places data item "a" in previous empty cell 2. Cell 2 performs the same operation as cell 3; placing data item "a" in cell 1. Cell 1 performs the same operation as cell 2; placing data item "a" in cell 0. Finally, cell 0, in performing the same operation as its following cells, renders the data item to the requestor, thus satisfying the read request (Figure 3 and Column 2, line 50 – Column 3, line 3). Nakajima does not disclose communications between a plurality of cells taking place asynchronously. Chen et al. discloses a linked list queue whose structure is divided into blocks or chunks ("cells"), which in turn are divided into two or more data units ("locations", Page 2, Paragraph 0027). Chen's linked list system does not make a reference to a system clock for operation (asynchronously). It would have been obvious to one of ordinary skill in the art at the time the invention was made to **modify the system of Nakajima to operate in the asynchronous fashion of Chen et al. since doing so would allow the system to start and stop the transmission of data without adding the delays of waiting certain cycles in order to match with a system clock.**

Regarding Claim 9, Nakajima discloses a stack memory whose push and pop operations allow it to serve as a LIFO memory. In this stack memory, when a write operation is to occur, the data item to be written is presented to the stack. Once this data item is presented to the stack, this particular item is "Pushed" in to the stack by allowing the last empty cell of the

stack ("given cell contains no data items") to get the data item from its previous cells, thus allowing the data item to propagate down the stack. This is clearly demonstrated in Figure 2 where write operations occurs by pushing data item "a" down the stack to cell 4. In this demonstration, empty cells are allowed to get the data item until the data item sits in the last empty cell. Therefore, the data item would first sit in cell 0, then empty cell 1 would request or get the data item, then empty cell 2 would request the data item, empty cell 3 would request the data item, empty cell 4 would request the data item, and since cell 5 is full, no further requests would be made, thus leaving the data item in cell 4. This concludes the "push" operation of the LIFO stack memory (Figure 2 and Column 2, lines 25-50). This memory also performs a "pop" operation when a read operation is to occur. In a read operation, a data item is requested and the request is presented to the top of the stack. At this point, being that a data item is being requested and this particular stack provides the "last in" data item first, the last full cell ("the given cell contains no space for additional data items") would "put" or transfer its data item to the previous empty cell until such data item has been provided to satisfy the data request. This is clearly demonstrated in Figure 3, where a read operation occurs when given cell 4 "puts" data item "a" in previous empty cell 3. Once this occurs, cell 3 (now full), places data item "a" in previous empty cell 2. Cell 2 performs the same operation as cell 3; placing data item "a" in cell 1. Cell 1 performs the same operation as cell 2; placing data item "a" in cell 0. Finally, cell 0, in performing the same operation as its following cells, renders the data item to the requestor, thus satisfying the read request (Figure 3 and Column 2, line 50 – Column 3, line 3). Additionally, Nakajima discloses a state of the stack "SP" which denotes which cells of the stack have data stored in them. Being that the SP value is a known value to the system, it acts as a mechanism of

knowing which cells in the array are full and which are empty (Column 3, lines 19-27). Nakajima does not disclose communications between a plurality of cells taking place asynchronously. Chen et al. discloses a linked list queue whose structure is divided into blocks or chunks ("cells"), which in turn are divided into two or more data units ("locations", Page 2, Paragraph 0027). Chen's linked list system does not make a reference to a system clock for operation (asynchronously). It would have been obvious to one of ordinary skill in the art at the time the invention was made to **modify the system of Nakajima to operate in the asynchronous fashion of Chen et al. since doing so would allow the system to start and stop the transmission of data without adding the delays of waiting certain cycles in order to match with a system clock.**

Regarding Claims 7-8 and 20-21, Nakajima discloses a state of the stack "SP" which denotes which cells of the stack have data stored in them. Being that the SP value is a known value to the system, it acts as a mechanism of knowing which cells in the array are full and which are empty (Column 3, lines 19-27).

Regarding Claims 3, 10, and 16, Nakajima does not teach dividing each cell of the LIFO stack memory into a master and slave location for storing data items. Chen et al. teaches a linked list queue whose structure is divided into blocks or chunks ("cells"), which in turn are divided into two or more data units ("locations", Page 2, Paragraph 0027). Given that within each "chunk" structure within the linked list queue data is removed from the "chunk" queue at the head and entered into the "chunk" queue at the tail, it can be construed that the last data unit of each chunk acts as a slave unit since it holds new information temporarily until a top data unit has been emptied by a removal operation and thus, the new data is moved up at the event of

empty space being available above ("new data item is temporarily stored in the slave location until a preexisting data item in the master location can be moved to... make room for the new data item", Page 2, Paragraph 0029). It would have been obvious to one of ordinary skill in the art at the time the invention was made to equip the LIFO stack memory of Nakajima with the multi-data unit cells of Chen et al. since having the ability to store more than one data item in each cell would allow the system to reference more data with just one pointer, thus making multiple access operations less cumbersome (Figure 2).

Regarding Claims 4-6, 11-13, and 17-19, Nakajima does not teach dividing each cell of the LIFO stack memory into a master and slave location for storing data items. Chen et al. teaches a linked list queue whose structure is divided into blocks or chunks ("cells"), which in turn are divided into two or more data units ("locations", Page 2, Paragraph 0027). It would have been obvious to one of ordinary skill in the art at the time the invention was made to equip the LIFO stack memory of Nakajima with the multi-data unit cells of Chen et al. since having the ability to store more than one data item in each cell would allow the system to reference more data with just one pointer, thus making multiple access operations less cumbersome (Figure 2).

Response to Arguments

3. Applicant's arguments with respect to claims 1, 9, and 14 have been considered but are moot in view of the new ground(s) of rejection.

Although Nakajima does not disclose communications between a plurality of cells taking place asynchronously. Chen et al. discloses a linked list queue whose structure is divided into blocks or chunks ("cells"), which in turn are divided into two or more data units ("locations", Page 2, Paragraph 0027) and this linked list system does not make a reference to a system clock

for operation (asynchronously). It would have been obvious to one of ordinary skill in the art at the time the invention was made to **modify the system of Nakajima to operate in the asynchronous fashion of Chen et al. since doing so would allow the system to start and stop the transmission of data without adding the delays of waiting certain cycles in order to match with a system clock.**

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Midys Inoa whose telephone number is (703) 305-7850. The examiner can normally be reached on M-F 7:00am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on (703) 306-2903. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Midys Inoa

Midys Inoa
Examiner
Art Unit 2188

Mano Padmanabhan 4/5/04

MI

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